

Coenonympha: A Mixed Population of *arcania*, *darwiniana* and *gardetta*

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During a pause near Grenoble (Isère) on the way to the South of France last summer, I found fresh *C. arcania* and *C. gardetta* sharing some clearings in the conifer forest at about 5000 feet, on 31st July. With them were a few insects having the facies characteristics of *darwiniana*, in varying degrees. The four examples taken were all fresh males (see plate). Unfortunately—or even inexcusably—I was not thinking about *darwiniana* at the time, and was merely collecting a sample series of the two species in this locality; I don't doubt that I could have found more examples, and females.

The data on distribution, habitat and time of flight given in two recent works (Bretherton 1966, and Higgins and Riley 1970) show that *arcania* and *gardetta* can fly together, in July and between 900 and 1500 metres, "though this rarely happens". Hoffman, 1946, wrote of the "Zusammenfliegung" of these two species near Salzburg.

It appears that *darwiniana* has at some time been regarded as a separate species; Bretherton calls it a form of *arcania*, as did Lang in 1884, and Higgins and Riley place it firmly as a subspecies thereof. Bretherton writes of it as being found above 1500 metres, and Higgins and Riley place it in sub-alpine meadows at 5000 ft or more, rarely lower.

The presence of *darwiniana* individuals in one of the rare, mixed *arcania-gardetta* populations, on 31st July at around the 5000 ft level, seems to indicate the possibility of some interbreeding. These insects were found near the lower limit for *gardetta* and *darwiniana*, and at a high altitude for *arcania*. They were flying very late for *arcania* (unless the latter were representatives of a second brood), but at about the peak period for *gardetta* and *darwiniana*. Both for date and altitude, *arcania* was the outsider. If interbreeding between *gardetta* and *arcania* were physiologically feasible, it would be tempting to regard *darwiniana* as the result. If interbreeding be ruled out, then it seems that the "*darwiniana*" were either aberrations of *arcania*, which I doubt, or representatives of some variational trend that affects *arcania* colonies at high altitudes. There are a few Malayan butterflies whose montane representatives differ to some extent from their lowland ones. Perhaps, in time, that locality will hold no more *arcania*, and even no more *gardetta*,—only *darwiniana*.

It would be most interesting to know whether *darwiniana* has been recorded elsewhere flying together with either of the species, or both.